harman/kardon
HIGH FIDELITY CAR AMPLIFIER

CA260

owner's manual

harman/kardon CA260 HIGH FIDELITY CAR AMPLIFIER

SPECIFICATIONS

Congratulations on your purchase of a Harman Kardon CA260 High Fidelity Car Amplifier.

The CA260 is the result of an extensive engineering project to create the finest automotive high fidelity product available. It is superior in performance and has the ability to operate under extreme environmental conditions.

To fully understand the CA260's capability, please read this manual carefully and follow all of the instructions regarding its use and installation.

Power Output, RMS	: 60 watts per channel into 4 Ohms, 20 ~ 20,000Hz
	: 90 watts per channel into 2 Ohms, 20 ~ 20,000Hz
	. 180 watts bridged mono into 4 Ohms, 20 ~ 20,000Hz
HCC (High Instantaneous Current Capability)	. ±30A
THD (4 Ohms/2 Ohms)	: No more than 0.1%/0.2%
Negative Feedback	: 25dB
Power Bandwidth	. 10Hz to 100,000Hz
Frequency Response	· 10Hz to 100,000Hz +0, −3dB
Signal-to-Noise Ratio	: 80dB
Input Sensitivity	
Line Level	: 0.1V/0.5V (switchable)
High Level	: 1V
Active Crossover Characteristics	
High Pass	. 200Hz, 12dB/Octave
Low Pass	: 200Hz, 6dB/Octave
Power Supply	. DC +13.8V (11 ~ 16V usable), negative ground
Typical Input Current Requirements	
At Idle	. 2.5A
Full Power Music Signal	6 7A (4 Ohms/ch.)
	10A (2 Ohms/ch)
Full Power Sine Wave	. 20A (4 Ohms/ch)
	30A (2 Ohms/ch.)
Dimensions (W × H × D)	. 15-5/8" × 3-7/8" × 7-1/8" (396 × 98 × 180 mm)
Weight	. 10lbs. 2oz. (4.6kg)

All specifications and features subject to change without notice

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Accessories

Spare Fuse (1 pc)	Spade Lug with Tube (10 pcs.)
Power Cord (Red) (1 pc)	Installation Template (1 pc.)
Ground Cord (Black) (1 pc)	Mounting Screws and Washers (1 set)

FEATURES

■ 30 Amperes of HCC (High Instantaneous Current Capability) maintains a wide dynamic range and low distortion when driving low impedance or reactive loads.

■ High Power Output of 60 watts per channel into 4 Ohms, 90 watts per channel into 2 Ohms and 180 watts bridged-mono into 4 Ohms.

■ Ultrawide Bandwidth is achieved by the use of inherently fast open-loop circuitry This improves transient accuracy and phase linearity

■ Low Negative Feedback
Highly linear circuitry produces low distortion with only 25dB of negative feedback. This further improves dynamic accuracy.

■ Discrete Component Audio Circuitry is used because it was found to be the only way to provide HCC, Ultrawide Bandwidth and Low Negative Feedback.

■ High Capacity Power Supply
Two 10,000μF capacitors, six 80 watt switching transistors, and a sophisticated transformer coil design enable stable operating voltages even under high power conditions. This results in improved low frequency sound quality.

■ High Heat Dissipation Capability is provided by a large heatsink, efficient circuitry and rugged circuit components

■ Protection Circuitry assures high reliability under high temperature, overvoltage, reverse-voltage and short-circuit conditions, without degrading the sound quality during normal high power operation. When the internal temperature reaches 175° F (80° C), the maximum output power is reduced, which in turn reduces the operating temperature

■ Built-in Active Crossover and Bridged-mono features provide operating flexibility, system simplicity and added value.

GENERAL INSTRUCTIONS

• Be sure that metal objects or other foreign materials do not enter the unit This can cause immediate trouble or reduce the unit's long-term reliability.

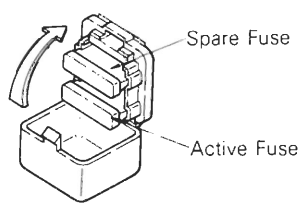
• It is natural for this unit to become warm while operating It incorporates two thermal protection circuits: One to prevent excessive temperatures from being developed under normal operation, and another to shut off the unit when operating abnormally When the thermal protection system is operating, the amber indicator will illuminate

• It is recommended that this unit be operated in a vehicle only while the engine (and electrical charging system) is running. At high power output, it typically draws about as much current as an automobile's headlights, and therefore can eventually discharge the battery.

• The speaker output terminals are protected from damage due to short-circuited speakers or speaker wires. When this protection circuitry is momentarily activiated, the power output is muted for several seconds and is then restored. When the terminals are continuously short-circuited, the power output will remain muted Should the latter occur, shut off the unit and check the speakers and speaker wires.

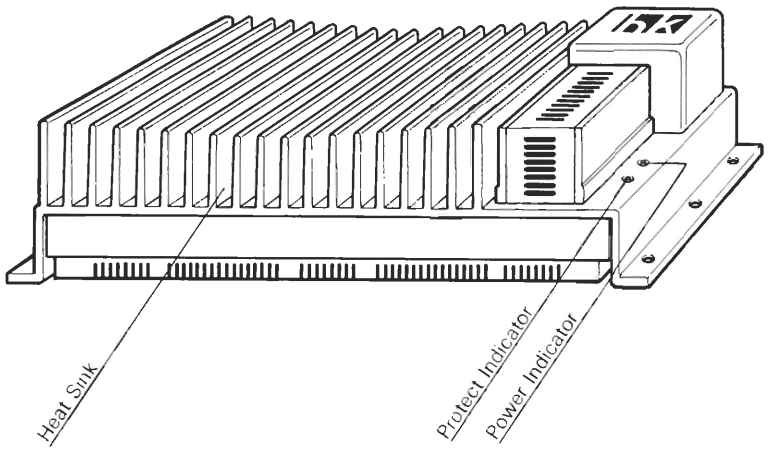
• The heat generated by this amplifier is dissipated into the air by the entire chassis If it is covered, or becomes dirty so that the circulation of the air around it is reduced, the unit's ability to dissipate heat will also be reduced. Under most conditions, the heat dissipating capability of this unit is more than enough to provide uninterrupted operation However, when full power is drawn in an already hot environment, any loss in heat dissipating capability is likely to result in activating one of the thermal protection circuits

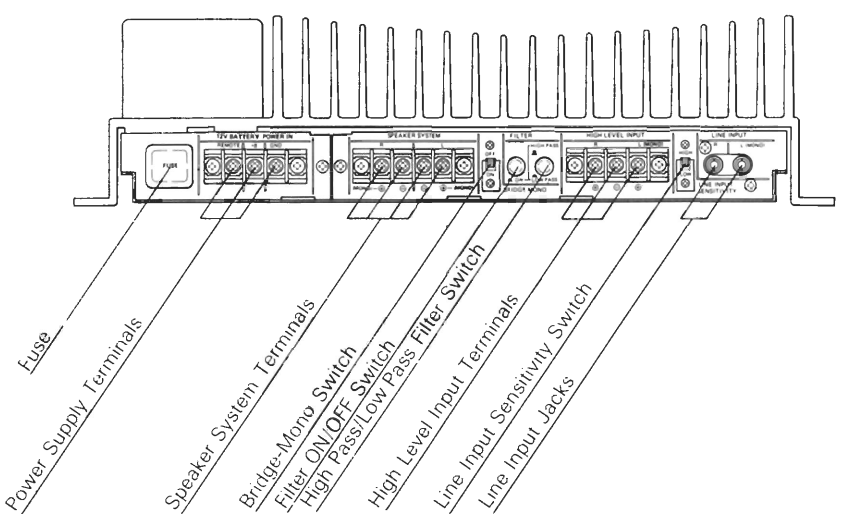
• This unit uses a 30 ampere auto fuse When replacing the fuse, be sure to use an identical 30 ampere (green) auto fuse. To replace the fuse, remove the cover by pushing down on the top of the fuse cover Use the spare fuse which is stored above in the fuse compartment.



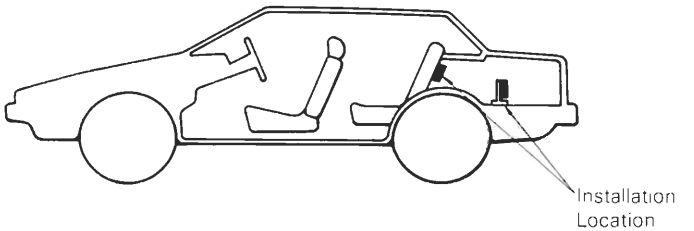
• If your unit behaves abnormally, turn it off immediately and consult an authorized Harman Kardon Service Station

CONFIGURATION





INSTALLATION LOCATIONS



The locations shown in the above illustration are recommended for the CA260 installation. If you prefer another location, consult an authorized Harman Kardon Dealer or Service Station before making the installation.

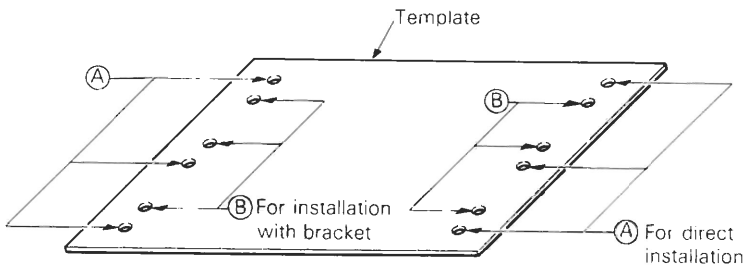
The recommended installation positions all result in vertical orientation of the heatsink fins. This provides the maximum heat dissipation capability. If possible, mount the CA260 chassis directly to a vertical or near-vertical surface, such as the inside wall behind the rear seat. If this is not possible, use the optional **Vertical Mounting Bracket (BR1)** to mount the CA260 to a horizontal surface, such as the trunk floor. The brackets permit vertical heatsink orientation when mounting to a horizontal surface.

In addition to vertical orientation, the recommended installation locations allow air to flow freely through the heatsink fins. This convection, or "chimney effect", provides maximum heat dissipation.

Horizontal heatsink orientation, such as when the unit is mounted under a seat or directly to the trunk floor, reduces heat dissipation and causes the unit to run hotter At low temperatures (below 70° F, 20° C) or at low power levels, these positions may be acceptable. But at higher temperatures and/or power levels, these positions are likely to cause one of the thermal protection systems to activate.

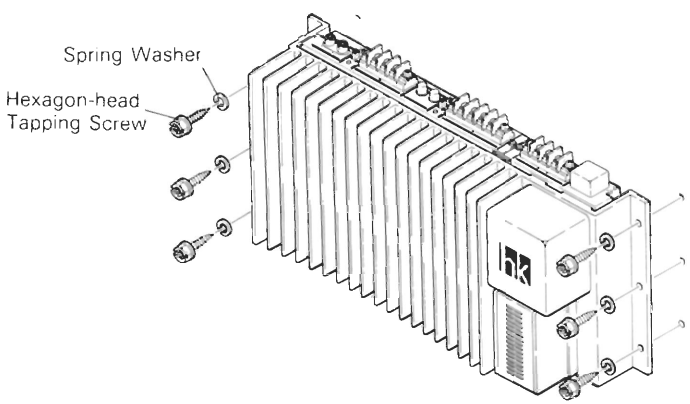
Note 1: Drill undersized holes in the car chassis so that the 5mm tapping screws fit tightly. We recommend 3 5mm or 1/8 inch diameter holes.

Note 2: A template is enclosed so that the precise hole locations for the tapping screws can be easily determined



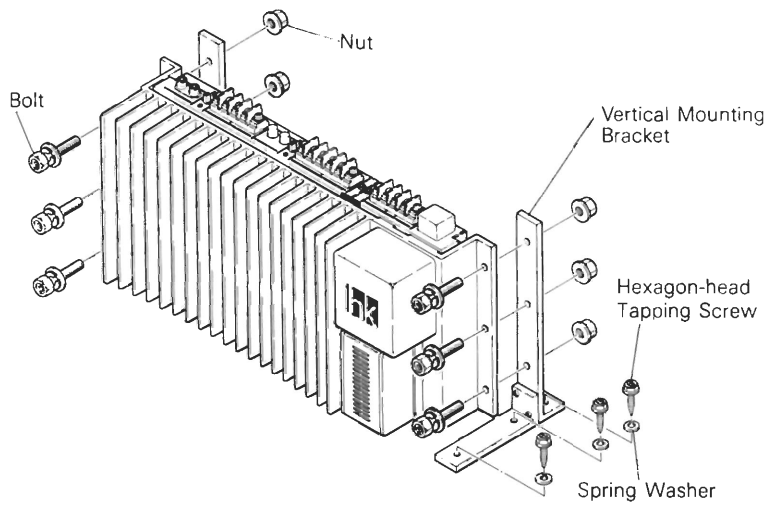
Directly Mounting to a Vertical Surface

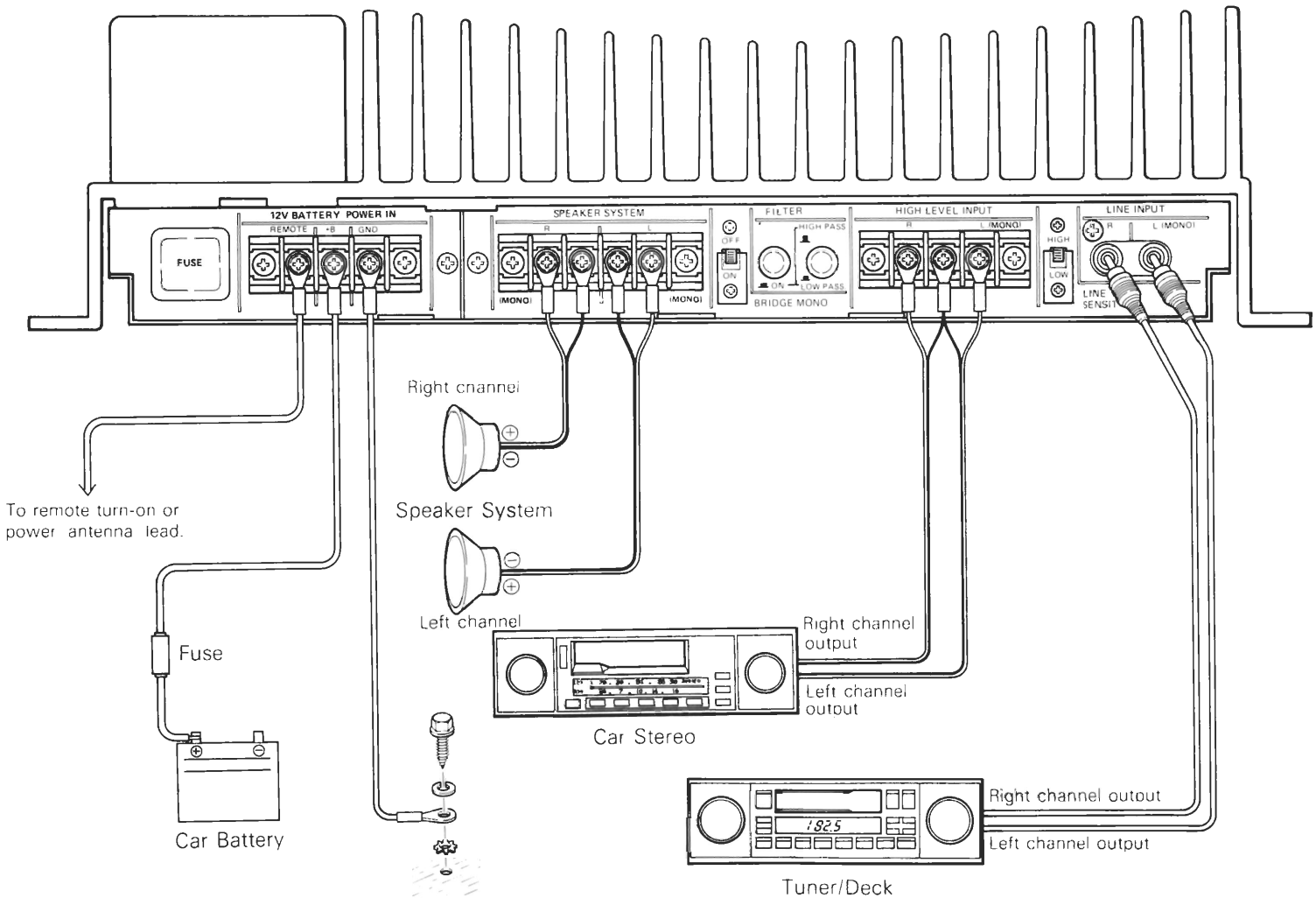
Using the template, locate and drill 6 holes corresponding to those in the CA260 chassis Securely mount the CA260 to the surface with the six 5mm hexagon-head tapping screws and spring washers



Mounting to a Horizontal Surface with the Optional Brackets (BR1)

Using the template, locate and drill 6 holes corresponding to those in the short ends of the vertical mounting brackets. Mount the brackets to the surface with the six 5mm hexagon-head tapping screws and spring washers. Then mount the CA260 to the brackets using the six 5mm hexagon-head nuts and bolts.





Note: A tuner/deck with line level outputs and a car stereo with high level (speaker) outputs should **not** be connected simultaneously, as shown in this diagram.

Caution # 1: The ignition key switch should be turned off before any connections are made to the car electrical system.

Caution # 2: The last connection to be made should be that between the positive terminal of the car battery and the " + B" terminal on the CA260.

Connect the CA260 to the car electrical system and to the other components in the audio system as per the following instructions:

Remote

This terminal enables the power switch of the car stereo or tuner/deck to also turn on the CA260. Connect it to the appropriate wire on the car stereo or tuner/deck

If a specific wire for this purpose is not provided, use the wire for controlling the power antenna. If that wire is already connected to the power antenna, the CA260 can be connected in addition

Should no power antenna wire be provided, an SPST (Single-Pole, Single-Throw) switch and a pair of wires can be connected between the remote terminal and the " + B" terminal. When the switch is closed, the CA260 will turn on.

+ B

The + B terminal is the positive power input terminal. It should be connected to the positive (+) terminal of the car battery by the enclosed 12 gauge wire or an equivalent type. It is good practice to add a line fuse near the battery terminal to protect the battery from a short circuit along the wire.

GND

This is the negative power input terminal It should be connected directly to the car chassis by a short, heavy gauge wire. It is not necessary to connect this terminal to the negative battery terminal.

Speaker Systems

For a conventional stereo system with one or two speaker systems per channel, connect the speaker systems to these terminals Be careful to connect the positive speaker terminals to the positive CA260 terminals. Do not connect the negative speaker terminals to the car chassis

When one pair of speakers is used, each one may have an impedance in the range of 2 ~ 8 Ohms and a power rating of at least 60 watts If two pairs of speakers are used, each one may have an impedance in the range of 4 ~ 8 Ohms and a power rating of at least 45 watts.

High Level Input

These input terminals are **only** to be used when connecting a car stereo unit that has a built-in amplifier and does not have line level (or preamp level) output jacks (or wires). Connect the output wires that would normally be connected to the speakers to these terminals. Be careful to connect the car stereo's positive output wires to the CA260's positive input terminals

If the car stereo's negative output wires are actually ground wires, they can be twisted together and connected to the CA260's high level negative (−) terminal.

However, if the car stereo unit has a power rating of more than 8 watts per channel (with low distortion), it is likely that its negative output wires are not actually ground wires, but instead are "live." In this case, do not connect these wires to the CA260 at all. Instead, connect a wire from the chassis of the car stereo unit to the CA260's negative high level input terminal. If electrical noise results from this connection method, contact the Harman Kardon service department for a special bulletin regarding this matter.

Note: The line input sensitivity switch must be set to the "low" position when the high level input terminals are connected

Line Level Input Jacks

These input terminals are for connection to the line level (or preamp) output jacks on the car stereo or tuner/deck It is recommended that high quality shielded coaxial cables with tight-fitting RCA plugs be used for this connection.

Line Input Sensitivity Switch

This switch matches the line input sensitivity of the CA260 to the line output level of the car stereo or tuner/deck. If the rated output level is equal to or more than 0.8 volts (800 millivolts), set this switch in the "low" position. Otherwise, set it in the "high" position.

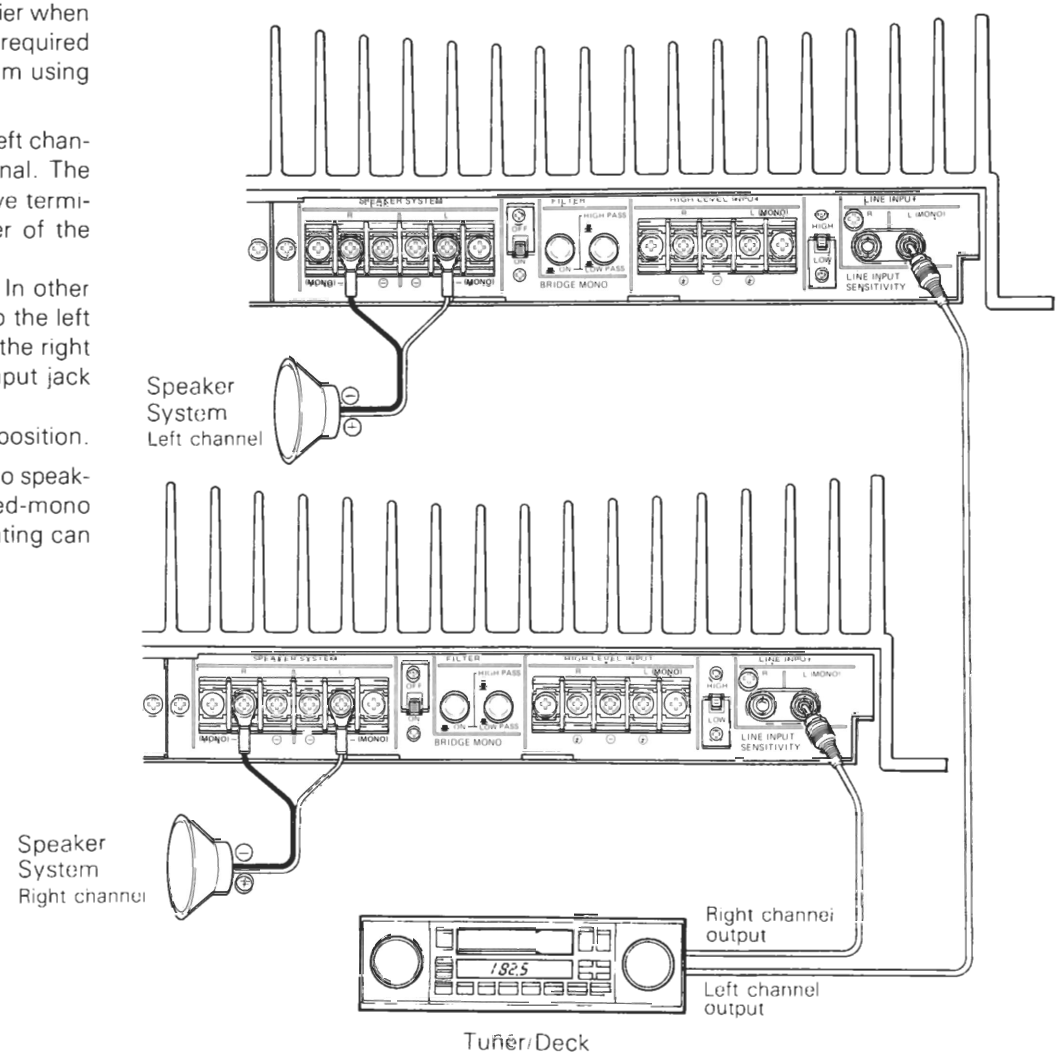
If the line output level of the car stereo or tuner/deck is not known, assume that it is more than 0.8 volts. When operating the total system, if it is necessary to turn the volume control of the car stereo or tuner/deck to maximum in order to obtain a desired listening level, then the line output level is likely to be less than 0.8 volts, and the line input sensitivity switch should be put in the "high" position.

BRIDGED-MONO OPERATION

The CA260 is capable of operating as a 180 watt mono power amplifier when driving a 4 Ohm speaker system. When used this way, two units are required for a stereo system The instructions for connecting a stereo system using two CA260's in the bridged-mono mode follow:

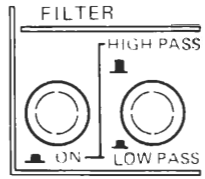
1. Each amplifier will have one speaker system connected from the left channel positive(+) terminal to the right channel positive (+) terminal. The left channel positive terminal should be connected to the positive terminal of the speaker system. No connections are made to either of the CA260's negative speaker terminals.
2. The input to each CA260 is made to its left channel input jack. In other words, the left channel output of the tuner/deck is connected to the left channel input jack of the CA260 driving the "left" speaker, and the right channel output of the tuner/deck is made to the left channel input jack of the CA260 driving the "right" speaker.
3. The bridged-mono switch on each CA260 is placed in the "on" position.

Note: Only one speaker system with an impedance of 4 Ohms, or two speakers with an impedance of 8 Ohms each, can be used in the bridged-mono mode. Also, only speaker systems with a sufficiently high power rating can be safely used.



USING THE HIGH PASS AND LOW PASS FILTERS

Two CA260's can be used with two woofers (low frequency speakers) and two mid-high (or full-range) speakers to make up an "active" system, both amplifiers being driven by the same tuner/deck. This type of system is connected as follows.



1. Set the filter on/off switch of one CA260 to the "on" position. Then set the high pass/low pass switch to the "low pass" position Connect the woofers (low frequency speakers) to this amplifier
2. Set the filter on/off switch of the other CA260 to the "on" position Then set the high pass/low pass switch to the "high pass" position Connect the mid-high (or full range) speakers to this amplifier
3. Connect the left channel input jacks of each amplifier to the left channel output of the tuner/deck. Connect the right channel input jacks of each amplifier to the right channel output of the tuner/deck

Note: If the tonal balance seems to be favoring either the high or low frequency range, try using different line input sensitivity switch positions to make the best balance. For example, if the sound is bass heavy, set the line input sensitivity switch for the "low pass" amplifier to the "low" position. This will reduce the signal to the woofers